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chart the corresponding red lettering can not be shown.

The chart is 98" \times 75".

An analogous chart of the aliphatic series was described in SCIENCE.

ALEXANDER LOWY

UNIVERSITY OF PITTSBURGH

THE KENTUCKY ACADEMY OF SCIENCE

THE Kentucky Academy of Science held its sixth annual meeting at the University of Kentucky on Saturday, May 3, 1919, with J. E. Barton, president, in the chair. After a brief business session at which a number of new members were elected, the following program was presented:

President's address, by J. E. Barton, "The relation of private forestry to the economic interests of Kentucky."

It was brought out that there are no public forests in Kentucky, the large bodies of forest lands being privately owned, mainly by coal companies. The preservation of timber in Kentucky is therefore a problem in private forestry. It was considered desirable that the legislature should pass some law regulating private forests and stimulating timber development by suitable modification of the methods of taxing timber land.

New fossil invertebrates from a new fossil horizon in the coal measures of eastern Kentucky: W. R. JILLSON, state geologist. A new fossiliferous limestone horizon in the Coal Measures of eastern Kentucky has been discovered by the author who has done sufficient field work on it to demonstrate that it possesses features of fundamental stratigraphic importance to the unmapped geology of this section. A comprehensive collection of invertebrates taken by the author from an outcrop of this horizon on the Dr. G. T. Kendrick farm on the headwaters of Cow Creek, Floyd county, and identified by Professor Charles Schuchert, shows an incomplete list of about forty species of which ten are new and about sixteen very rare. It is a very unusual Pottsville fauna with the characteristic index forms absent. Three other widespread fossiliferous limestones in this same area are noted, all of which possess virgin stratigraphic potentialities. The author tentatively correlates them into the Norton (Middle) and Wise (Upper) Pottsville.

A phase of evolution: W. S. ANDERSON. In every breed of animals it is found that a few are exceptionally potent in passing on their good quali-

ties. The author illustrated this from certain families of horses and advanced some speculations as to the possible cause.

Electrolytic solution glow: DEAN W. MARTIN. In December, 1917, the author observed a glow on the aluminum terminal of an electrolytic rectifier with lead and aluminum electrodes in a 10 per cent. solution of sodium phosphate. It was found possible to produce the glow with solutions of many different salts, of different concentrations, at temperatures from 0 to 100° and with electrodes of aluminum, zinc or magnesium and with voltages ranging from 80 to 1,500. A simple apparatus was exhibited and production of the glow was demonstrated. The observation is published for the purpose of learning whether others have noted or investigated the phenomenon.

The bacteriological descriptive group number: D. J. HEALY. The author has found it necessary to develop the group number of the Society of American Bacteriologists in such a manner that it will indicate the action of soil bacteria on nitrogenous compounds, organic acids and sulfur. The group number, enlarged in this manner, has proved valuable in the study of soil bacteria.

A brief discussion of Lexington sewage purification: H. D. SPEARS. A modern sewage-disposal plant operated by gravity takes care of 3,000,000 gallons containing 2½ tons of suspended solids. The sewage passes through bar screens and grit chambers into Imhoff tanks, where bacterial action takes place and sludge is deposited. The effluent passes into "dosing tanks" which empty automatically every 15 minutes into filter beds, 2 acres area, of coarsely broken limestone covered with broken granite, together 6 feet deep. Thence the effluent passes through secondary sedimentation tanks and into a near-by stream. It is clear, odorless and has a "relative stability" of about 95 per cent. The sludge from the Imhoff tank is drawn off periodically into drying beds whence it is returned to the soil, when spadable.

A specimen of lodestone from Kentucky: A. M. PETER. A specimen of titaniferous magnetite possessing polarity was exhibited, which had been sent in from Edmondson county.

The composition of the ash of crab grass (Digitaria sanguinalis) as affected by the soil in which it is grown: G. DAVIS BUCKNER. Crab grass (*Digitaria sanguinalis*), when grown in garden soil, contains an ash which is 16.1 per cent. larger than the ash of the same species when grown in a 4-inch limestone roadway. The comparative composition

of the ashes shows that the sample grown in limestone contains 22.7 per cent. more P_2O_5 ; 44.0 per cent. more CaO ; 27.6 per cent. more MgO , and 18.8 per cent. less K_2O than the one grown in garden soil. The external appearance of these two samples was identical.

Some experiments in adsorption phenomena: P. L. BLUMENTHAL, D. J. HEALY and A. M. PETER. (Presented by P. L. BLUMENTHAL.) The adsorption of crystal violet by powdered phlogopite was demonstrated and it was shown that the mineral which had been acted upon by bacterial cultures withdrew from dilute solution more of the dye than did the untreated mineral, weight for weight.

An improved astatic galvanometer: C. C. KIPLINGER. A new coil for an astatic galvanometer has been designed, the simplicity and efficiency of which is described. A current equivalent to $1^\circ C$. temperature difference between the terminals of a 5 couple iron-germansilver thermopile shows a swing of 8 inches on a scale 50 inches from the instrument.

A modified ebullioscopic apparatus for accurate molecular weight determinations: C. C. KIPLINGER. A method is suggested whereby an ebullioscopic apparatus may be made independent of variations in atmospheric pressure. It has been shown that molecular weights may be determined by this method of comparison without any knowledge of the constant for the given solvent, thus rendering the experiment independent of previous experimental errors involved in the determination of C .

Notes on the viability of tobacco seed: G. C. ROUNTT. Experience in Canada shows that home-grown seed germinates better than seed from more southern localities and a higher percentage of viable seed are set during bright, warm weather than when cool, cloudy weather prevails. A higher percentage of germination is obtained from seeds gathered when the pods are half brown than when they are left until the pods are wholly brown. Tobacco seed retains its viability for many years; a sample eight years old having shown 95 per cent. germination, and one twelve years old, 70 per cent.

The projection of water waves: N. F. SMITH. A simple method was described by which surface waves in water could be produced and projected by means of the lantern so as to illustrate important characteristics of wave motion.

The McCreary county aerolite: A. M. MILLER. Portions of the aerolite which recently fell in Mc-

Creary county, Ky., were exhibited and an account of the occurrence was given. The body is stony and nearly white, containing very little metallic iron. Dr. Peter reported a qualitative chemical analysis showing that the mineral is essentially a magnesium silicate, probably enstatite. Metallic particles amounting to less than 0.2 per cent. were shown to be nickeliferous iron. Chromium, phosphorus and sulfur were detected.

The discovery of a mica deposit in eastern Kentucky: W. R. JILLSON. The author announces the discovery of a single stratigraphic unit deposit of nearly pure flake mica in the Pottsville of Pike county—the first in Kentucky.

At the afternoon session Dr. E. B. Hart, of the University of Wisconsin, Madison, Wis., addressed the academy on "The widening viewpoint in animal nutrition."

An illustrated discussion was given of the most important results of investigations concerning nutrition which had been conducted in his laboratory at the University of Wisconsin and elsewhere. A brief account was given of the accumulative toxic properties of wheat embryos and the corrective properties of corn stover which, however, did not equal the legume hays in this respect. The vitamin factor was briefly discussed as were the subjects of roughage, protein efficiency, and the necessity of inorganic salts. Finally it was stated that a balanced diet must contain sufficient fuel value, efficient proteins, food accessories, roughages and inorganic salts and be sensibly free from toxic material.

Officers were elected as follows: Dr. Paul P. Boyd, president; Dr. Walter H. Coolidge, vice-president; Dr. Alfred M. Peter, secretary; Mr. J. S. McHargue, treasurer.

ALFRED M. PETER,
Secretary

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